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STEM RUST AND BARBERRY NEWS

Issued by
Office of Barberry Eradication

U. S. Department of Agriculture

Volume I

August 10, 1930

Number 7

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INDEX

Rust Situation in the Spring Wheat Area - - - -	66
Epidemiology - - - - - - - - - - - - - - - - -	67
Eastern Region - - - - - - - - - - - - - - - - -	68
Western Region - - - - - - - - - - - - - - - - -	70

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RUST SITUATION IN THE SPRING WHEAT AREA

Barberries rusted more heavily and earlier this year than usual but the dry heat and the earliness of the crop prevented wide-spread damage. Central Minnesota will produce considerable shriveled grain this year. How much of this is due to rust and how much to heat is hard to say. With the thousands of common barberry bushes still growing in southern Minnesota and in the adjoining States of Iowa and Wisconsin, there is still possibility for the occurrence of serious rust epidemics.

A 2,800 mile auto trip through Minnesota, the Dakotas, and Eastern Montana has just been completed by a member of this office. Similar trips have been made through this territory each year since 1922. It is believed, with the exception of very limited areas, the early prospects for a good wheat crop could hardly have been better. The stands were exceptionally good and the grain was a week or ten days ahead of last year's crop. Much of the wheat was in the dough before the heat wave struck it and it is surprising how plump the threshed berries were in many apparently burned out regions.

Black stem rust inoculum appeared in small quantities about the usual time but caused little damage as the dry, hot weather toughened the straw and retarded the development and spread of rust spores. When one considers the stage of development of the grain in the Red River Valley, it has an unusually small amount of rust and it is doubtful if rust will be much of a factor there this year.

Several interesting rust spread areas were found this year. Fairly definite in extent and noticeably heavier in rust infection, these areas immediately suggested that the rust was of local origin. The following towns are located within these local rust areas which were found to vary from ten to fifty miles across: Big Stone City, Twin Brooks, and Bowdle in South Dakota; and Flasher, Lehr, and Churchs Ferry in North Dakota. Barberry eradication field men have

been sent to some of these areas in an effort to locate the barberries responsible for these rust spreads.

In this connection it is interesting to note that early this spring a little girl living near Oriska, North Dakota, found a common barberry bush in an old tree claim on her father's farm. The records of this office show that in each of the past three years rust has been much heavier in the wheat fields of this region than in fields a few miles away. The barberry bush was removed shortly after being found, and a recent examination of the Oriska territory failed to show any more rust than the general light infection found elsewhere.

D. G. F.

EPIDEMIOLOGY

(Reported by Miss Laura Hamilton)

International publicity will be given the work of barberry and epidemiology men when Dr. Stakman gives his talk on stem rust, in particular the results of spore trapping that has been done this year and in years past, scheduled for the week of August 16 at the meeting of the International Botanical Congress in London. Results of this year's work, so far as they are available, wind movements, and rainfall fit in very well with the dates of appearance of infection in the field. Mr. Walter has been examining slides, and Mr. Butler has been correlating the results with his field observations.

Dr. Cotter and Dr. Melander made tracial and uredinial collections in the Red River Valley the last of July and spent a day at the Dominion Rust Research Laboratory at Winnipeg. They discussed the rust work in progress, and were fortunate enough to see sulfur dusting by airplane. The plane was being flown 110 miles an hour at a level just above the tops of the plants.

North of Fargo in the Red River Valley of Minnesota, grain has been damaged very little by heat, according to Dr. Cotter on July 31. Marquis was in medium or hard dough, and stem rust averaged about 20 per cent in severity. He and Dr. Melander anticipated little damage from rust.

In northeastern North Dakota, north of Carrington, most common wheat on the 29th was in hard dough, although east of Langdon some was later. In the latter area there was considerable rust on the necks of

plants. West from Langdon to Rock Lake and south to Cando, where little Marquis is being grown, the infection was most severe: in four fields examined by Mr. Ukkelberg the severity was about 50 per cent, and in one near Rock Lake Dr. Humphrey observed an 85-per-cent infection. In the area southeast to Devils Lake, on the other hand, severity in some fields was only 3 per cent. Although these percentages represent extremes, there was a comparatively wide range in the amount of rust in different fields in any given section of the northeast.

Work in the greenhouse has been delayed by the extremely high temperatures prevailing during July. Plant mortality has been high, and an epidemic of root rot developed that almost wiped out a number of rust strains that were ready for identification.

Mr. Ukkelberg felt rewarded for two season's field work when he found a barberry bush near Cavalier recently. He states, "Just what I have been looking for for two summers...It was perhaps more or less of an accident, but a fellow has to get a break once in a while. I noticed the field was heavily rusted from the road and on examination found 50 or 60 per cent severity. There was a large grove across the road, so I scouted around a little and found one bush. There may be more... Forty rods away from the bush severity is only about 10 per cent."

EASTERN REGION

Ohio - 8 East Broad Street, Columbus - Harry Atwood

This is the season of the year for community picnics. The barberry field men are taking advantage of these gatherings to further our cause in a publicity and educational sense in the areas where survey activities are in progress.

On July 31, in Mercer County a county-wide picnic was held in a grove in Liberty Township. This is an annual affair and a good crowd can always be counted on.

A squad of four men, under the direction of Mr. Von Ohlen, were just ready to start survey operations in this Township. They were invited to put up a barberry demonstration on the grounds. The boys potted a typical common barberry bush for the demonstration. They had posters and the winged panels showing the characteristics of both common and Japanese barberries. Two of the

field men were on hand during the day to distribute bulletins and talk to the people about the barberry eradication campaign. They report a great deal of interest shown in the demonstration and that it was a tremendous help to them in their work in the community.

During the month of July, 1500 barberry bushes were destroyed on 106 properties in Montgomery County. Thirteen thousand pounds of salt were used to kill those bushes.

On July 22, 23, and 24, the Barberry Leader visited several areas of escaped barberries in Indiana; and while there had an opportunity to meet the field men and observe the methods used while scouting along creeks and in wooded areas. The trip was very much worth while.

Indiana - Agricultural Experiment Station, La Fayette - Wayne E. Leer

In spite of the hot, dry weather the survey of Bartholomew and Decatur Counties is progressing nicely. The cooperation of the farmers in these counties is very good. Practically everyone knows the men are in the counties and seem to be anticipating their arrival. The colored cards sent out prior to going into these counties, the window demonstrations, and the newspaper publicity have all aided in bringing the work before the people in these counties.

A roadside demonstration is being placed in Bartholomew County. The bush is located along a main traveled road in the yard of Dr. Woods, who is one of the large orchardists of southern Indiana. Many people visit his orchards each year. This demonstration is so located that it should attract a great deal of attention. It is planned to leave it there until after apple-harvest time.

The reports from the 4-H club camp directors indicate that the barberry demonstration is being well received. All 4-H club camps were visited last year and it is planned to visit all of them again this year. About 30 per cent of those at the camps this year were in attendance last year.

The picture of the field force appeared in the Alco-Gravure section of the Indianapolis Sunday Star, July 27. This paper has the widest circulation of any paper in the State and this piece of publicity is doing us a great amount of good.

Illinois - Box 72, Post Office Building, Urbana - Robert W. Bills

The first survey of the State has been completed. The last squads from Williamson and Massac Counties moved north on July 20. All of the field agents are now in Stephenson and Lake Counties, working out of Lena, Freeport, Dakota, Antioch, Libertyville, and Waukegan.

About forty bushes have been destroyed in Stephenson County by the three squads working there. About twenty have been destroyed by Mr. Roll's squad at Antioch, and over 5,000 by Mr. Wood's squad which is on resurvey near Burnee. This squad has been working on the well known Lake Farm which has been the scene of much activity since 1920 when the escaped area was found. The area is a 40 acre woods with much underbrush.

More than 5,000 large escaped bushes were destroyed there in 1925. A resurvey was made in 1927 and many more bushes were destroyed. This year, after two and one half growing seasons have elapsed since the last resurvey, the woods have been given a thorough combing. Only one tall bush was found. The others were young plants ranging from seedlings to bushes two or three feet in height. Seedlings have continued to appear each year and it is very evident that resurveys will have to be made every three years over a period of several years to insure the eradication of all plants. A few were bearing fruit but they appeared to be about five years of age and were small and well concealed at the time of the last resurvey. Other farms in the vicinity of the Lake Farm also have smaller numbers of escaped bushes. They will be carefully scouted also.

Several rust spreads were observed in July. A heavy infection of rust on oats and wheat near barberry bushes was reported in Ridott Township, Stephenson County. A direct spread of rust from barberry bushes to Red Top and Blue Grass and Timothy(?) was found in Jefferson Township, Stephenson County.

A heavy rust infection on spring wheat and late oats adjacent to escaped barberries in the fence lines was found in Warren Township, Lake County. The wheat from the badly rusted plants was light and shrivelled. In all probability, much of it would have been blown from the separator with the straw.

Barley and wheat next to the Lake Woods carried a moderate to heavy infection of stem rust.

Grain through northern Illinois showed a fairly general infection of stem rust at harvest time. Losses were avoided by the drought which hastened the maturity of the plants. A few fields of late maturing oats and spring wheat suffered some damage.

Mr. Matheny gave a lecture and showed two reels of barberry movies to a group of 75 vocational agriculture students and farmers at Dakota, on July 23. Arrangements have been made to have the pictures shown at Lena, and Pearl City, on August 2 and August 5.

Materials for the State exhibits to be used at 40 county fairs were furnished to the Illinois Division of Educational Exhibits with the assistance of Mr. G. D. George.

Michigan - Michigan State College, East Lansing - Francis B. Powers

The work of the barberry squads in Michigan has been slow recently due to the necessity of strip scouting some large areas of swamp land. Very few bushes have been destroyed during the past two weeks. The total number destroyed during July was 651 bushes and 8,315 seedlings.

The Barberry Leader visited and worked with all of the squads during the last half of July. He also visited experimental plots located in Antrim and Leelanau Counties. The bushes that were treated with crude oil a year ago were still thriving. The bushes have now been treated with salt.

Most of the wheat, rye, and barley are cut or being cut. Most oats are still green and in the soft dough stage. Stem rust was becoming general on wheat about the time it started to ripen, so practically no damage will be caused by rust. Considerable loss will probably be caused by heat and dryness. Oats show traces of stem rust at the present time, but it is believed the damage will be slight.

During the Cherry Festival at Traverse City, a demonstration was set up in the window of a vacant store on the main

street. It was allowed to remain for two weeks and attracted considerable attention. At Farmers' Day at Michigan State College, which was attended by 5,000, we had two demonstrations, one in the registration tent and one aboard the wood demonstration train.

Other publicity carried on has consisted of the placing of warning posters in conspicuous places, circularizing farm communities and specialized groups, such as master farmers, with letters and bulletins, and writing newspaper articles. Through the work of A. J. Patch, assistant extension editor at Michigan State College, our message has appeared in over one hundred small newspapers throughout the State. John Carton, joint publicity agent for both the Blister Rust and Barberry Eradication Campaigns, has kept the barberry news up to date in the large newspapers and where the active campaign is being conducted.

WESTERN REGION

Minnesota - University Farm, St. Paul - Leonard W. Melander

During the latter part of July the intensive survey progressed without interruption. We had no rain to keep the men from working. However, the intense heat made working conditions very severe. Again we are running into the situation of strip scouting large woodlots very carefully and only finding one or two small bushes. In Scott County there seems to be an area of escaped bushes which extends over several miles, but in which the bushes are rather isolated. In Eureka Township, Dakota County, we have a very distinct area of escaped bushes. We have found several rust spreads. It appears that we had two rust spreads, one in Scott County and one in Rice County, which coalesced. We are attempting to make a joint rust spread map of the two. In Lonsdale Township, Dakota County, we found a bush on a hillside, where the rust had spread to wheat for about a mile. Near Shakopee in Scott County, we found a grove containing 30 bushes. The winter rye adjacent was very heavily infected, having a severity as high as 75 per cent. The only place in Minnesota where we ever have winter rye with as heavy infection as this is near barberries.

Practically all the grain in Minnesota is out of danger of stem rust at present. There is no question but what the heat did considerable damage. The heaviest losses from stem rust were

suffered in the southeastern quarter of the State. The eastern half seemed to receive more inoculum than the western half. The barberries in southeastern Minnesota obviously contributed considerable inoculum this spring because they were very heavily infected. In the counties in which we are working now, especially in Scott County, the rust spreads indicate that even one bush had an influence over a considerable area.

Iowa - Morrill Hall, Iowa State College, Ames - D. R. Shepherd

Second survey has been completed in Kossuth County and third survey in Emmet and Osceola Counties has been completed. Third survey will soon be completed in Dickenson County, at which time all the field men will then be transferred to Lyon, Sioux, and Humbolt Counties. Survey in most of the counties this year has been in an open type of country which enables the men to cover the territory rather rapidly.

The Barberry Leader talked to two groups of 4-H club members. The assistant leader talked to one group of Farm Bureau members who lived in the territory being covered by survey. The story of black stem rust and the common barberry was discussed with a group of Kiwanians at a noon day luncheon at Rock Rapids, in Rock County near where a group of field men are working.

A total of 865 barberry bushes and 4583 seedlings was found on 32 properties since July 15.

Small grains crops in Iowa are now mostly threshed. There may be some loss from stem rust in fields of late oats. Heavy infection can be found in some field of spring wheat and barley, but the crops are mature and ready for cutting.

District No. 1 - State College Station, Fargo, N. Dak. - G. C. Mayoue

The work in North Dakota now consists of two types of survey, second survey in the three western counties of Burke, Mountrail, and McLean, and intensive third survey in two prominent rust areas of the State, namely, the Devils Lake area and the Ashley-Kulm-Ellendale area.

Survey of a seedling area in Burke County revealed a greater spread than had been anticipated. Contrary to former belief, these seedlings seem to have had little difficulty in growing under the generally dry conditions of western North Dakota.

The two field agents who conducted a demonstration on barberry eradication at four major fairs throughout the State during the past month reported that they found no antagonism towards the work, but on the contrary a sincere and active interest in the campaign in North Dakota. While there still remains a great deal of educational work that must be done, it is obvious that this activity is responsible for the disappearance of practically all antagonistic feeling.

One of the best finds made recently was in Pembina County, where Harry Ukkelberg traced a spread of rust to its source and located two escaped bushes growing in the heavy underbrush of a farmstead grove. Because the heavy infection ran right towards the grove Mr. Ukkelberg out of curiosity decided to inspect the tree claim. His first few steps brought him practically upon these five-foot escapes which bore dried social infection. Because of the spotted infection in surrounding fields for a territory of several miles it was thought inadvisable to conduct a rust spread demonstration. However, the find afforded a good opportunity for a state-wide news story.

Montana - Survey in Montana continues to progress satisfactorily with all squads reporting bushes. The greater part of this time has been spent on farm-to-farm survey. The men report that the interest of the people varies according to their experience with rust, but in no cases have they had any opposition to the eradication of bushes.

Several new locations have been reported on the farm-to-farm survey recently completed in western Yellowstone County beyond Billings. Upon the completion of this survey scouting was begun along the bottoms of the Yellowstone River. The heavy underbrush in some places makes for rather slow progress.

In Carbon County the greater part of the work is farm-to-farm survey, although the numerous escaped areas that have been found necessitate considerable strip scouting around locations. By this method many escapes have been found a mile to a mile and a half from the original plantings. The discovery of an

escaped area larger than that previously thought to exist means that more time will be required for the region now under survey.

Wyoming - Scouts in Wyoming have reported no bushes since those located in Crook County. The men are confronted with difficulties in travel because of irregular roads which follow no definite arrangement.

Through the courtesy of the Publications Department of the University of Wyoming, approximately 65 newspapers covered the story of the find made in Crook County. By arrangements with the Director of Information Service at the University, state wide publicity for Wyoming will continue to be handled in this manner.

District No. 2 - Box 66, State College Station, Brookings, S. Dak. -
Raymond O. Bulger

A mid-summer conference of Nebraska field men was held on July 26 at Grand Island, Nebraska. A program of talks relative to subject matter and the progress of the work was arranged by the assistant leader.

Over 6,000 barberry bushes and seedlings have been found in Nebraska so far this season. Two splendid examples of the spread of stem rust were noted. In both cases the spread was to rye, although one field of winter wheat nearby was severely rusted. Farmers in the vicinity claimed they had quit raising wheat on account of the rust. The most heavily infected rye that the writer has ever seen was found in this vicinity. Field men in Nebraska report that in general they are receiving fine cooperation from the people in their counties.

A similar mid-summer conference is being planned for South Dakota field men on August 8 at Brookings. It is expected that both Mr. Meier and Mr. Fletcher will be present to take part in the program. Not so many barberries have been found in this State to date, but the finds have been significant because of former rust spreads.

During June and July, talks were given at six summer school sessions, four Agronomy Field Days and at two luncheon clubs. The new "Rust" film was shown at all of these meetings where it was possible. Considerable interest in the work was manifest at these meetings.

Stem rust did very little damage in District No. 2 as a whole. Only a few late fields in Nebraska showed any loss, and in only a few areas in South Dakota will the damage be of any consequence. Hot, dry weather, especially in South Dakota, caused considerable loss to small grain. Corn is also being hurt by the continued effect of heat and drought.

District No. 3 - Agricultural College, Ft. Collins, Colo. -
E. A. Lungren

The District Leader talked to the Smith-Hughes men at their annual conference in Laramie, Wyoming, on July 23 and they have signified a willingness to teach this subject in their schools during the coming year.

The District Leader spent two days with the Extension men of the Colorado Agricultural College who are now doing extension work in the wheat areas of Colorado. A talk was given to farmers at three meetings on "Methods of Controlling Plant Diseases to Bring About Better Quality of Grain."

Colorado - The field men in Colorado have been spending all of this month in El Paso County. The creeks near Colorado Springs are covered with shrubbery and the scouting is difficult. Many barberries have been found along these creeks as well as in the town of Colorado Springs. More than 400 barberries have been eradicated from the county to date. We have had excellent cooperation in getting the bushes out and the people have displayed keen interest in our work. It will take about another week to finish the county and then our men will move to Fremont County.

Western Nebraska - To date 6 bushes have been found on 5 properties in Scotts Bluff County.

One bush found on July 22 was heavily infected and had spread rust to wild grasses. It was not as good a spread as at first reported. Practically all the bushes we have found in western Nebraska were infected. From all appearances we have been locating the sources of the epidemics that have existed in western Nebraska in the past. The people of Scotts Bluff County have been impressed with the work and many of the farmers saw the demonstration of the barberry spreading rust. We received good publicity on this spread.

Wyoming - In Wyoming the field men are still on the search for barberries in Goshen County. The work will be completed this month and the team will then move into Platte County. The Platte Valley has been surveyed very thoroughly in this county, but no escaped bushes have been found to date. A light infection of rust has been found on the grain, but not sufficient to cause any damage. Arrangements have been made for a fair demonstration in Goshen County on the first of September.

A wire was sent by the Michigan office to Mr. G. D. George, St. Paul, asking for dimensions of the "Death Cell" demonstration used at fairs. The reply delivered by the messenger was "Death cell caused by sore feet six feet high". After having the message traced, it proved to be "Death cell four by four feet six feet high".